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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,871	09/30/2005	Tatsuo Hoshino	21405 US C038435/0185664	9168
7590 Stephen M Haracz Bryan Cave 1290 Avenue of the America New York, NY 10104-3300			EXAMINER LILLING, HERBERT J	
			ART UNIT 1657	PAPER NUMBER
			MAIL DATE 10/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/528,871

Applicant(s)

HOSHINO ET AL.

Examiner

HERBERT J. LILLING

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on March 23, 2005 [Prel amd & IDS].
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>MARCH 23, 2005</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Receipt is acknowledged of a preliminary amendment and a prior art information statement filed March 23, 2005.
2. Claims 1-10 are pending in this application.
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson et al U.S. 6,015,684 alone or further in view of Choi, KR2001044210A [claim 10].

Jacobson et al teaches the following:

"Start-up conditions are 8 standard liters per minute (SLPM) aeration and 500 rpm agitation. The pH is controlled at 5.5 with 750 ml 1:3 dilution of reagent grade ammonium hydroxide, NH₄ OH. Food grade antifoam is added as required. The culture is fed 1750 g glucose (Cerelease.TM., CPC International, Summit-Argo, Ill.) as a 50% by weight solution at a rate such that the glucose concentration is less than 5 grams per liter (g/l), preferably between 0.1 and 2.5 g/l throughout the fermentation. Dissolved oxygen is controlled by agitation and airflow to between 20% and 90%

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saturation. Results of such fermentations with UBV-AX3 and 4 are presented in Table 1:"

which disclosure renders the claimed language prima facie obvious for claim 1 which recites:

"A fermentation method of astaxanthin using *Phaffia rhodozyma* comprising the steps of: (a) in the growing phase, feeding of a nutrient medium containing glucose or sucrose based on the specific growth rate (μ) of *Phaffia rhodozyma* cells, and (b) in the astaxanthin production phase, feeding of the nutrient medium based on the astaxanthin production rate, **while keeping the glucose concentration in the fermentation broth almost 0 g/L during the whole fermentation period.**";

since it is considered that 0.1 g/L is almost 0 g/L.

If there are any other differences with respect to the μ range, pH, temperature, concentration, nutrients, reagents employed for controlling the pH or gassing rates, these conditions based on the disclosure of Jacobson et al would have been prima facie obvious for one skilled in the art absent unexpected results or process steps.

Claim 10 pertaining to the microorganism employed in the production of astaxanthin would have been prima facie obvious to substitute for the microorganism of Jacobson et al in view of the advantages taught by Choi whereby the microorganism strain generates astaxanthin in a high yield in a short period of time which would be prima facie obvious for one of ordinary skill in the art to reasonably expect to obtain higher yields in a shorter time using the strain of Choi in the process of Jacobson et al absent unexpected results.

4. **No claim is allowed.**

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5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Lilling whose telephone number is 571-272-0918 and Fax Number is **571-273-8300**, or SPE Jon Weber whose telephone number is 571-272-0925. Examiner can be reached Monday-Friday from about 7:30 A.M. to about 7:00 P.M. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

H.J.Lilling: HJL
(571) 272-0918
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October 17, 2007



Dr. Herbert J. Lilling
Primary Examiner
Group 1600 Art Unit 1657